Visualizing the Intercity Railway Network in Mainland China

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Abstract

Keywords

The railway is a major way to travel between cities in China. Its passenger traffic has been increasing since 2008. By 2016 the volume reached 1,257.93 billion person kilometres, accounting for 40% of China's total transport traffic, the largest in the world (ASKCI, 2017). For a long-term national economic strategy, China is investing heavily in high-speed railways. The structure of railway network and the distribution of traffic demand show the spatial pattern of China's economic development and regional interaction to a certain extent. However, the distribution of railway network in China is uneven. According to the traditional equal land area map, the density of distribution varies significantly over regions. Railways in East China are far more concentrated than the West China. In the meantime, there is great imbalance in economic development over regions in China too. The western regions are mostly mountainous, with vast land but rare population distribution. Their economies have been left behind by the eastern regions. The traditional equal land area maps in

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railway network distribution have failed to take into account the supply and demand as a united figure.

This study develops a featured graph to exhibit the intercity railway network in the mainland China by an equal population cartogram (Gastner & Newman, 2004).

The map as shown in Figure 1 is developed by substituting the amount of population by city for land areas, with the national railway mapped upon accordingly. The geometry of the map is rescaled in proportion to the population. The spatial distribution of Chinese railway network relative to the population is thus represented. The names of municipalities and provincial capitals are labeled in the figure.

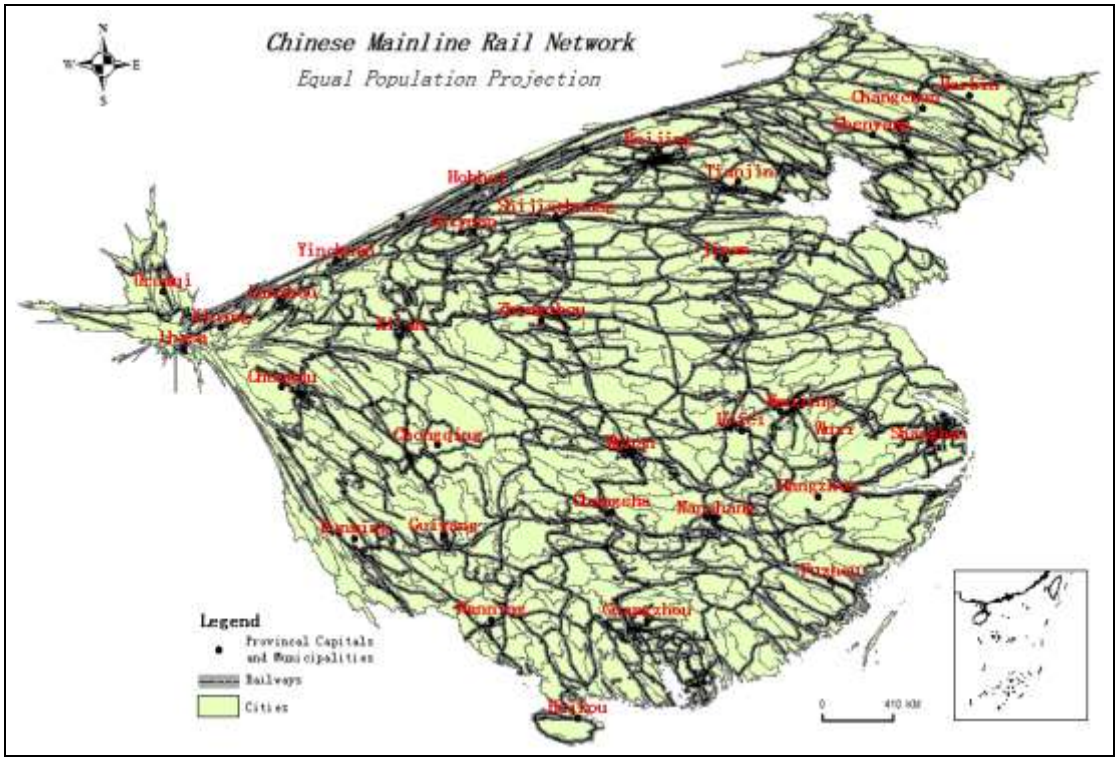

Figure 1. China's railway network on an equal population cartogram

The picture demonstrates that the distribution of railway in China is in accordance with the population distribution and the distribution of railway in China is fairly uniform. Due to the denser population, the East China areas in this map are enlarged. On the other hand, the western regions (e.g. Xinjiang, Tibet and Qinghai with provincial capitals in the map shown as Urumqi, Lhasa and Xining respectively), though with broader landscape, are minified in the map. The distribution of railway lines in West China is sparse in a traditional map, while on the population cartogram it shows the resemblance to that of the East China. The railway distribution in

municipalities such as Shanghai, Beijing and Guangzhou is more concentrated, as these cities are junctions of national railway in East China and have number of stations in the cities.

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